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ABSTRACT

Content analysis of critical events methodology is demonstrated in an evaluation of the Educational Telecommunications for Alaska (ETA) Project. This methodology was used to collect and interpret the data derived from the ETA staff personnel representing five components of the project. The data were analyzed using content analysis procedures. The results indicated that content analysis of critical events is a potentially useful and low cost method for collecting and analyzing easily available information and can be employed to provide project management with evaluation information that may otherwise be overlooked. Suggestions for overcoming limitations of the methodology are included. (Author)

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THE USE OF CONTENT ANALYSIS OF CRITICAL EVENTS IN PROGRAM EVALUATION

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Abstract

Content analysis of critical events methodology is demonstrated in an evaluation of the Educational Telecommunications for Alaska (ETA) Project. This methodology was used to collect and interpret the data derived from the ETA staff personnel representing five components of the project. The data were analyzed using content analysis procedures. The results indicated that content analysis of critical events is a potentially useful and low cost method for collecting and analyzing easily available information and can be employed to provide project management with evaluation information that may otherwise be overlooked. Suggestions for overcoming limitations of the methodology are included.

Introduction

The Educational Telecommunications for Alaska (ETA) Project is a multimillion dollar program emphasizing educational uses of telecommunications technology. The first year of operation witnessed two specific evaluation problems. Although these problems were specific to the context of the ETA Project, Connolly, Dale, Hart, and Zelman (1975) have cited similar problems in other large-scale programs.

As in all evaluations, the first task for the evaluation staff was to find a way to determine a method which could obtain data that were readily available about project progress and an appropriate methodology for analyzing them. Although this task is present in all evaluations, it was of a larger magnitude in the ETA Project due to the vastness of Alaska. In a state where costs are 15 to 40 percent higher than in the lower 48 states, distances enormous, and the typical evaluation strategies questionable, collection of readily available data on large-scale program activities becomes formidable. For example, Alaska has four time zones, is 2400 miles from east to west and 1420 miles from north to south, and currently has approximately 450,000 residents scattered over 586,412 square miles (Facts about Alaska, 1977). Furthermore, because of difficulties in sending and receiving messages, exacerbated by harsh weather, data collection techniques such as mail surveys proved highly unreliable. In 1976, the Department of Education conducted a statewide survey of school personnel and obtained a total response rate of only 36 percent (Planning and Evaluation Survey, 1976).

The second task, also common to all evaluations, was to find a way to provide project management with formative (Scriven, 1969) informatic . to aid in decision making while documenting project activities. Owens, Haenn, and Fehrenbacher (1976) have indicated that while emphasis has been placed upon providing information for decision making, much evaluation methodology has not kept pace with project management's needs.

It was in response to these two tasks that content analysis of critical events was developed. Content analysis of critical events provides a framework to analyze information that is easily obtainable, low in cost, and not overburdening to staff personnel. It also provides evaluation information to project management that might ordinarily be overlooked during traditional evaluations and can be utilized for constructing evaluation questions that require future in-depth study.

Content Analysis and Critical Events

Content analysis of critical events stems from Berelson's (1954) early work on content analysis and Hecht's (1976) and Mackeracher, Davie, and Patterson's (1976) works with critical events. Content analysis has been employed primarily in the assessment of a wide variety of communication phenomena such as propaganda, trends, styles, changes in content and readability (Kerlinger, 1973), although it has also been utilized in program evaluation (Owens et al., 1976).

Critical event analysis has drawn limited attention although it has been addressed in evaluation of telecommunications programs (Practical Concepts Incorporated, 1977). While both of these methods have been employed individually, a review of the literature did not indicate their combined use in program evaluation.

Definition

Berelson (1952), as cited by Festinger and Katz (1959, appeared to provide the most appropriate definition of content analysis for the present purpose: "Content analysis is a research technique for the objective, systematic, and quantitative description of any symbolic behavior" (p. 424). Content analysis in this definition refers to a system of classification which allows for the objective, systematic, and quantitative description of behaviors. It provides a framework for the researcher to: (1) identify primary characteristics of the content, (2) make inferences about the nature of the content, and (3) interpret the content so that it is meaningful.

To define critical events, we modified a definition utilized by Practical Concepts Incorporated (1975). A critical event in the ETA Project was defined as any significant program issue, action, or event in which a staff member participated during the past week. Employing this definition of critical events provided a model for the evaluators to systematically collect, integrate, and document significant actions of program members. The collection of information could come from direct observation, interviewing, or collection of documents.

Procedure

Kerlinger (1973) has specified three steps in content analysis. The first consists of defining the universe of content to be analyzed, the second involves categorizing it, and the third involves quantification of the collected material.

For the purpose of this study, the universe was defined as all replies to the question, "What significant program issues, actions, or

events have you participated in during the past week?" These responses were submitted by all of the five major project components via weekly status reports. The major project components included: administration, instruction, management, the Department of Education (DOE), and the Regional Resource Centers (RRCs). The administrative component consisted of members of the funding agency responsible for financial management but not part of the day-to-day management decisions. The instructional component consisted of staff members actually implementing the day-to-day programs that were being developed. The management component included the project director and assistant director whose purpose was to make sure that the staff was completing tasks on time. The DOE was a separate component in charge of implementing the project on a statewide basis. The RRCs were the interface between the DOE and local education districts. A checklist was constructed indicating whether the report was received by the evaluation staff. All copies were filed for future analysis. The reporting procedure was initiated July 1, 1978 and an analysis was conducted after three months of operation.

The categorization of the universe was developed by grouping into clusters key stimulus words derived from the responses from the five project components. This procedure produced four mutually exclusive categories based upon the key stimulus words found in the responses. For this project, the procedure was referred to as a natural clustering technique (Lee, 1978). A fifth category was then added to allow for classification of responses which did not fit into any of the final four categories. The categories and their corresponding definitions are:

Implementation was identified by key stimulus words such as finished, finalized, delivered, implemented, installed, completed, etc.

Process was identified by key stimulus words such as preparing, planning, investigating, exploring, meeting, projecting, reviewing, analysis, etc.

Clarification was identified by key stimulus words or phrases such as change in policy, new position, change in program direction, notification of new policy, etc.

Problems were identified by key stimulus words or phrases such as had to respond to, mad, angry, criticized, annoyed, etc.

Miscellaneous was included for any responses that could not be classified into any of the above categories.

Analysis of the Data

The unit of analysis chosen as most appropriate for evaluating the status reports was themes. Kerlinger (1973) has indicated that a theme is often a sentence, or proposition about something. In our case, a theme corresponded to one of the five categories cited previously. A response was recorded as falling into a particular category if it had characteristics similar to that category definition or theme.

To assess reliability of coding, Pi (π) was utilized (Scott & Wertheimer, 1962). This procedure represents the extent to which two coders agree beyond the level that would be expected by chance. Responses from the status reports were coded by two independent judges based upon definitions of each category.

Results

Table 1 depicts the frequency of critical events for each category occurring in each project component. This table clearly indicates the

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Insert Table 1 about here

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majority of critical events reported for all project components occurred in the two categories "Implementation" and "Process." Table 1 also indicates that the area with the least reported critical events was the "Problem" category. These results were confirmed using follow up interviews.

The computed reliabilities for the Administration, Instructional, Management, Department of Education, and Regional Resource Centers components were .88, .85, .76, and .66 respectively. The reliability for nominal-scale intercoder agreements among all components was .81. This was obtained by averaging all individual component reliabilities.

Discussion

Upon analysis of the status reports, it was found that most activities which project participants reported could be classified into one of the four main categories. These categories reflected the activities that participants were engaged in during data collection. The resulting activities provided an indication of where most activity occurred and which components experienced problems. This analysis also produced results that were used to alert project management to the different ways project staff was spending its time. These results proved particularly useful when project management's expectations were not congruent with staff activities.

In addition to the analysis conducted in this paper, a secondary analysis of any of the areas could also be provided. For example, any area that was particularly troublesome could be identified and answers provided to questions such as, "Why does the problem exist?", "Who caused it?, or "When did it start?" This information would be derived from individual analysis of status reports and forwarded to project management.

Although the authors feel that this methodology is useful for both formative and summative evaluation, two specific problems were identified. The first problem was defining "critical events." Participants tended to view "critical" in a different way. What was critical to one participant was not necessarily critical to another. Also, what was not critical one day may have become critical one week later. It is suggested that the definition problem be resolved by operationally defining critical events more thoroughly and by conducting a preservice training session to explain, elaborate, and answer any questions that project participants have about the definition.

A second problem existed with the category labeled "Process." It should be obvious from an examination of Table 1 that an extreme number of responses fell into this category (as compared to other categories) and that it did not adequately differentiate activities in this area. It is suggested that this problem be alleviated by constructing narrower, more discrete categories that adequately reflect each specific unit of a theme. In this case, that could be accomplished by further partitioning the category "process."

Evidence of content analysis of critical events previously being

employed in program evaluation was quite scarce. It was developed as an adjunct method for facilitating data interpretation and increasing formative evaluation information to project management. As a new research/evaluation technique, it has accomplished its purposes, although further refinement will be required. It is hoped that this very succinct treatment of content analysis of critical events has indicated the possible promise and problems associated with its utilization and will stimulate its further development. Although this method has only been employed briefly, the authors feel that it holds much promise for future evaluation activities.

Table 1

Total Frequency of Reported Critical Events

by Project Component

Category	Project component				
	Admin.	Instruct.	Manage.	DOE	RRC
Implementation	13	9	5	6	2
Process	65	57	42	27	38
Clarification	1	1	8	2	2
Problems	0	0	3	1	0
Miscellaneous	3	3	1	1	3

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